



LTPP Seasonal Monitoring Program

Site Monitoring Suspension Status Draft Final Report for GPS Section 271028 (27B) Detroit Lakes, Minnesota

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LTPP Seasonal Monitoring Program

Site Monitoring Suspension Status Draft Final Report for GPS Section 271028 (27B) Detroit Lakes, Minnesota

FHWA CONTRACT No. DTFH61-96C-00013

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November 1997

Technical Report Documentation Page

1. Report No. FHWA-		2. Government Accession No.		3. Recipient's Catalog No.	
4. Title and Subtitle LTPP Seasonal Monitoring Program Site Monitoring Suspension Report for GPS Section 271028(27B) Detroit Lakes, Minnesota				5. Report Date February 3, 1998	
				6. Performing Organization Code	
7. Author(s) Robert Kumapley and Graden Elliott				8. Performing Organization Report No.	
9. Performing Organization Name and Address ERES Consultants, Inc. 505 West University Avenue Champaign, Illinois 61820-3915				10. Work Unit No.	
				11. Contract or Grant No. DTFH61-96-C-00013	
12. Sponsoring Agency Name and Address Federal Highway Administration LTPP Division, HNR-40 Turner-Fairbanks Highway Research Center 6300 Georgetown Pike McLean, Virginia 22101-2296				13. Type of Report and Period Covered Final Report Oct. 1997 to Sept. 1998	
				14. Sponsoring Agency Code	
15. Supplementary Notes FHWA LTPP Technical Representative - Aramis Lopez, HNR-40					
16. Abstract This report contains information on suspension of NCRCO's data collection activities for the Long Term Pavement Performance (LTPP) General Pavement Study (GPS) section 271028 conducted on September 10, 1997. The report presents a description of the following activities: SMP data collection activities, including evaluation of instrument and equipment performance prior to suspension of data collection, and monitoring resumption schedule. The resumption of monitoring at this site is scheduled for September, 1998. All instrumentation at the site will be tested at that time.					
17. Keyword Long Term Pavement Performance, LTPP, Seasonal Monitoring Program, SMP, Time Domain Reflectometry, TDR, Piezometer, Falling Weight Deflectometer			18. Distribution Statement No restrictions. This document is available to the public from the sponsoring agency.		
19. Security Classification (of this report) Unclassified		Security Classification (of this page) Unclassified		21. No. of Pages	
				22. Price	

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LTPP Seasonal Monitoring Program
Site Monitoring Suspension Status
Draft Final Report for
GPS Section 271028 (27B)
Detroit Lakes, Minnesota

1.0 INTRODUCTION

As dictated by seasonal monitoring procedures, the North Central Regional Coordination Office (NCRCO) has suspended data collection for the Long Term Pavement Performance (LTPP) General Pavement Study (GPS) section 271028 for a period of one year, effective September 10, 1997. The test section, which is part of the Seasonal Monitoring Program (SMP) managed by the Federal Highway Administration (FHWA) LTPP Division, is approximately 21 kilometers east of Detroit Lakes, Minnesota, on the eastbound driving lanes of US Highway 10. Additional background information on the test section, types of instruments installed, and the in-place pavement structure can be found in the *Site Installation Report for GPS Section 271028 (27A), Detroit Lakes, Minnesota*, dated January 1996 (1).

This report contains information on site monitoring suspension and data collection activities conducted on September 10, 1997. After the installation of instrumentation in the test section on September 8, 1993, the test section was visited 27 times for SMP data collection by Braun Intertec, until June 14, 1995.

The test section was then visited 8 times for onsite SMP data collection by MN-DOT. Beginning October 8, 1996, the site was visited 14 times for SMP data collection by ERES Consultants. Following the ERES site visit of July 9, 1997, the test section was overlaid, and data collection on subsequent visits was limited to onsite, mobile and water table measurements. As of September 10, 1997, MN-DOT has assumed SMP data collection from the site, until September 1998, after which ERES Consultants will monitor the site for another year. The dates of these visits and the activities performed can be found in the SMP data collection summary table in appendix A. This section is planned to be monitored every other year for the remainder of the LTPP study or until it is removed from the study.

The report presents a description of the following activities: SMP data collection activities, including evaluation of instrument and equipment performance prior to suspension of monitoring, and schedule for resumption of monitoring.

2.0 SMP DATA COLLECTION

2.1 SMP Data Collection and Upload

On ERES Consultants' last site visit of September 10, 1997, data collection consisted of onsite, mobile and water table data. The full suite of SMP monitoring measurements in the *LTPP Seasonal Monitoring Program Instrument Installation and Data Collection Guidelines (2)* was not performed prior to the

overlay of the site, as ERES was not informed of the the overlay. New layer thickness data is currently being investigated.

A summary of all the SMP data collected to date can be found in the SMP data collection summary table in appendix A. The specific type and amount of data collected can be found on the SMP field activity report (data sheet SMP-D10) in appendix B.

2.2 Instrument and Equipment Problems

All the sensors in the test section (TDR, rain gauge, and Measurement Research Corporation [MRC]) were evaluated by reviewing the data from the onsite and mobile dataloggers using the SMPCheck 2.5c program (3). A review of the data collected during this visit indicated that all sensors are functioning properly. The TDR traces all have the maximum and minimum points on the traces that enable analysis.

3.0 INSTRUMENT DE-INSTALLATION ACTIVITIES

3.1 Suspension Preparation and Repairs to Instrumentation Hole

All instrumentation remains installed at this site. The instrument block is in excellent condition, having been overlayed in July of 1997.

3.2 Unique Site Features

This test section is the 2nd SMP installation in the LTPP North Central Region. In the course of monitoring this site, a solar panel was installed on top of the cabinets to prolong the life of the battery onsite. The solar panel was found to be an effective and significant addition to the SMP onsite data collection equipment that ensured efficient storage and collection of the SMP data stored onsite.

4.0 INSTRUMENT REINSTALLATION

All instrumentation remains installed at this site. Resumption of SMP monitoring by ERES Consultants is scheduled for September, 1998, assuming the section remains in study following the overlay, pending the recommendations of PCS/Law and FHWA.

5.0 SUMMARY

This report contains information on data collection activities for the LTPP GPS section 271028, conducted on September 10, 1997. The report presents a description of the SMP data collection activities, including an evaluation of the SMP sensors and equipment. No problems were noted from the onsite data recorded from August 14, 1997, through September 10, 1997. The TDR traces all have the required maximum and minimum points that enable analysis of the TDR data.

Resumption of monitoring at this site by ERES Consultants is scheduled for September, 1998.

LIST OF REFERENCES

1. *LTPP Seasonal Monitoring Program Site Installation Report for GPS Section 271028 (27B) Detroit Lakes, Minnesota*, Federal Highway Administration, LTPP Division, HNR-40, Turner-Fairbanks Highway Research Center, McLean, Virginia. January 1996.
2. *LTPP Seasonal Monitoring Program: Instrumentation Installation and Data Collection Guideline*. FHWA-RD-94-110, Federal Highway Administration, LTPP Division, HNR-40, Turner-Fairbanks Highway Research Center, McLean, Virginia. April 1994.
3. SMPCheck, computer software version 2.5c, prepared for the Federal Highway Administration, Pavement Performance Division, HNR-30, McLean, Virginia. July 1997.
4. Lopez, Aramis, Jr. *Long Term Pavement Performance Directive for the Seasonal Monitoring Program: Directive Number SM-8, Suspension of SMP Site Monitoring Activities*. Federal Highway Administration, LTPP Division, HNR-40, Turner-Fairbanks Highway Research Center, McLean, Virginia. March 1995.

Appendix A - SMP Data Collection Summary Table

27SB - 271028, US-10 EB LANES, 13 MILES EAST OF DETROIT LAKES, MN (MP 58.3)

Page 1 of 2

Date dd/mm/yy	ONSITE Data				MOBILE Data				Manual Data				FWD Data				Distress Profile				Comments
	Pvmt. Temp.	Air Temp.	Rain	TDR Volts	Frost TDR	Backup TDR	Frost 2-Pl.	Frost 4-Pl.	Water Table	Pvmt. Elev.	Joint Open.	Joint Fault	Man. Temp.	OWP	ML	PE	M	P	P	D	
1-Nov-92																					
1-Jun-93																					
27-Jul-93																					
8-Sep-93	93A																				INSTALLATION, MANUAL TDR DATA.
9-Sep-93	93B																				NO RESISTIVITY SWITCH BOX
20-Oct-93	93C																				NO RESISTIVITY SWITCH BOX
18-Nov-93	93D																				ADDED RELAY TO ONSITE, TWO FILES FOR THE DAY
20-Nov-93																					
8-Dec-93	93E																				BAD RESISTIVITY SWITCH BOX
12-Jan-94	94A																				BAD RESISTIVITY SWITCH BOX
9-Feb-94	94B																				
17-Feb-94																					
9-Mar-94	94C																				MANUAL READING ON TDR #1, CDD TRACE.
23-Mar-94	94D																				BAD RESISTIVITY DATA
5-Apr-94	94E																				
20-Apr-94																					
26-Apr-94	94F																				
10-May-94	94G																				
14-Jun-94	94H																				
12-Jul-94	94I																				
28-Jul-94																					
9-Aug-94	94J																				
19-Sep-94	94K																				NO *MOBILE DATA FILE FOUND, DOWNLOADED PROGRAM AGAIN
29-Sep-94																					PROBLEMS WITH DATA LOGGER, CHECK FILE CONTENTS.
11-Oct-94	94L																				
8-Nov-94	94M																				
6-Dec-94	94N																				
10-Jan-95	95A																				
20-Jan-95																					
7-Feb-95	95B																				PROFILE DATA NOT RECEIVED BY KCO.
8-Mar-95	95C																				WEATHER REDUCED TESTING, CAP FROZE ON PEZOMETER
21-Mar-95	95D																				REPLACED METAL COVER ON PEZOMETER
4-Apr-95	95E																				
18-Apr-95	95F																				
22-Apr-95																					
9-May-95	95G																				WEATHER REDUCED TESTING, #7 PIN ON RESISTIVITY CABLE REPAIRED.
15-May-95	95H																				
14-Jun-95	95I																				
27-Jun-95																					

Notes

1 Denotes data collected and processed by Braun Intertec Corp

P Denotes data collected and processed by ERLS Consultants, Inc

X Denotes data collected by Braun Intertec Corp.

X Denotes data collected by ERLS Consultants, Inc.

X Denotes data collected by Braun Intertec Corp. and processed by ERLS Consultants, Inc.

X Denotes data collected and processed by SME

P Denotes data collected and processed by Braun Intertec Corp
 P Denotes data collected and processed by ERES Consultants, Inc
 X Denotes data collected by Braun Intertec Corp.
 X Denotes data collected by ERES Consultants, Inc.
 X Denotes data collected by Braun Intertec Corp. and processed by ERES Consultants, Inc.
 M Denotes data collected by MN-DOT
 S Denotes data collected and processed by SME

Appendix B - SMP Data Sheets

- SMP-D10: SMP Field Activity Report

LTPP Seasonal Monitoring Program Data Sheet SMP-D10 SMP Field Activity Report		Agency Code [27] LTPP Section ID [1028]
Onsite Datalogger and Instrumentation		
File Name - *.ONS	275B97KI	Comments:
Battery Replace	Yes - (No)	Voltages 17.0
Repairs/Calib.		
Other: _____		
Mobile Datalogger		
File Name - *.MOB		Comments:
TDR/Resistance Voltages	Sets (0 2)	
Other: _____		
Manual Data Collection		
Piezometer	(Yes) - No	Comments:
Resistance 2 pt.	Sets (0 1)	
Resistivity 4 pt.	Sets (1 1)	
Elevations	Sets (1 1)	
Distress Survey	Yes - No	
Long. Dipstick Profile	Yes - (No)	
Photos or Video	(Yes) - No	
Other: _____		
FWD and Associated Data		
FWD Testing	Sets (1 1)	Operator: DSP
JCP - Snap Rings	Sets (1 1)	AC
JCP - Faulting	Sets (1 1)	AC
Other: _____		

IF REQUIRED, ATTACH SKETCHES TO THIS DATA SHEET

Comments: Overlaid 7/97Prepared by: GFEEmployer: ERES/NCRDate (dd/mm/yy): 10/SEP/97Daylight Savings Time (Y or N): Y

Appendix C- Site Information Sheet (SIS)

271028 - 27SB

LOCATION -US-10 EB Lanes, 13 Miles East of Detroit Lakes, MN (MP 58.3)

CONTACTS -Joe Stegmaier (218) 847-1567, Dennis redding (218) 847-1575

TEMP HOLES - Sta 0-04, Depths are about 1.2", 6.0", and 8.2" (AC thickness = 8.5")

DISTRESS COMMENTS:

Sta F1 -Tests at Sta 0-15, and at 25 foot intervals from Sta 0+00 to Sta 2+00.

-15 LP NEXT TO INSTRUMENT HOLE AND L-TRANS. CR. BEHIND LP
125 M-TRANS.CR. 2' BEHIND LP AND M-TRANS.CR. 8" IN FRONT OF D7
175 M-TRANS.CR. 1' IN FRONT OF D7
200 M-TRANS.CR. 1' BEHIND LP

Sta F3 -Tests at Sta 0-30, 0-20, 0-10, AND AT 25 FOOT INTERVALS FROM STA 0+00 TO STA 2+00.

-30 L-LONG.CR. DEVELOPING IN THE OWP BEHIND THE LP
-20 D7 ON INSTRUMENTATION HOLE AND L-TRANS.CR. EXTENDS FROM SAW BETWEEN D6 AND D7
-10 M-TRANS.CR. UNDER D7
125 M-TRANS.CR. 2' BEHIND LP AND 10" IN FRONT OF D7
200 M-TRANS.CR. 1' BEHIND LP

PIEZOMETER - Sta 1+00, 2.0 feet from edge of paved shoulder, Depth = 4.302M.

ELEVATIONS - Mn/DOT BM @ Sta. 0+00, 40 feet from edge of paved shoulder..

<u>Offsets:</u>	<u>PE</u>	<u>OWP</u>	<u>ML</u>	<u>IWP</u>	<u>ILE</u>
(M)	0.16	0.76	1.83	2.90	3.51
(ft)	0.5	2.5	6.0	9.5	11.5
	(nail)	(hole)	(hole)	(hole)	(hole)

Sta: Transverse profiles at Sta 0-30, 0-15, 0-10, and every 25 feet from Sta 0+00 to Sta 2+00 (None at Sta 0-20).

COMMENTS --